

Computational Plasma Physics in the Solar System and Beyond

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Abstract: The universe is composed almost entirely of ionized gas a.k.a. plasma, where the dynamics of space plasmas is governed by the interaction between the plasma and magnetic fields in space. Developing computer models to study plasma dynamics is challenging since plasma dynamics involves extremely complicated physics, which includes many physical processes operating together, and a strong coupling between large and small scales. I will briefly describe the basics of computational plasma physics and its applications to solar and space physics, astrophysics, and extrasolar planets.